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FILE 'CAPLUS' ENTERED AT 13:18:19 ON 27 NOV 2004
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=> s astaxanthin and plant and crtO
L1 11 ASTAXANTHIN AND PLANT AND CRTO

=> duplicate remove l1
DUPLICATE PREFERENCE IS 'BIOSIS, EMBASE, CAPLUS'
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n
PROCESSING COMPLETED FOR L1
L2 7 DUPLICATE REMOVE L1 (4 DUPLICATES REMOVED)

=> d l2 1-7 ibib ab

L2 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:3719 CAPLUS
DOCUMENT NUMBER: 140:74183
TITLE: Transgenic ***plants*** producing
4-ketocarotenoids in flower petals
INVENTOR(S): Hauptmann, Randal; Eisenreich, Robert; Eschenfeldt,
William; Khambatta, Zubin
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 77 pp., Cont.-in-part of U.S.
Ser. No. 325,265.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004003430	A1	20040101	US 2003-392942	20030320
US 2003196232	A1	20031016	US 2002-325265	20021219
WO 2003080849	A2	20031002	WO 2003-US8878	20030321

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-366444P P 20020321
US 2002-325265 A2 20021219

US 2001-302460P P 20010629
 US 2002-180775 A2 20020626
 US 2003-392942 A 20030320

AB The formation of a carotenoid compd. contg. a 4-keto-.beta.-ionene ring such as ***astaxanthin*** or canthaxanthin in flowers, and particularly in the corolla and reproductive parts of a flower of a higher ***plant*** whose flowers produce a carotenoid compd. contg. a .beta.-ionene ring such as .beta.-carotene or zeaxanthin, but otherwise do not produce ***astaxanthin*** or canthaxanthin is disclosed. One or more genes controlled by a promoter are inserted (transformed) into a higher ***plant***. The inserted gene encodes a chimeric enzyme including (a) a carotenoid-forming enzyme that is at least a ketolase. That gene is operatively linked to (b) a plastid-directed transit peptide. Some higher ***plants*** to be transformed produce at least zeaxanthin or .beta.-carotene in their flowers prior to transformation, whereas other ***plants*** produce little if any colored carotenoid pigments prior to transformation and are transformed with a cassette of carotenoids-forming genes. Methods of transformation and use of the transformed ***plants*** are described.

L2 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:172119 CAPLUS
 DOCUMENT NUMBER: 136:231339
 TITLE: Carotenoid production from a single carbon substrate
 INVENTOR(S): Brzostowicz, Patricia C.; Cheng, Qiong; Dicosimo, Deana J.; Koffas, Mattheos; Miller, Edward S.; Odom, J. Martin; Picataggio, Stephen K.; Rouviere, Pierre E.
 PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
 SOURCE: PCT Int. Appl., 156 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002018617	A2	20020307	WO 2001-US27420	20010904
WO 2002018617	A3	20030522		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 2002142408	A1	20021003	US 2001-938956	20010824
US 6818424	B2	20041116		
US 2003003528	A1	20030102	US 2001-941947	20010829
CA 2417261	AA	20020307	CA 2001-2417261	20010904
AU 2001088699	A5	20020313	AU 2001-88699	20010904
EP 1328639	A2	20030723	EP 2001-968453	20010904
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			

endogenous .beta.-carotene hydroxylase activity. Transformation of a higher ***plant*** (e.g., tobacco) with ***crtO*** is also provided, with signal sequences targeting expression in the chromoplast. (3S,3'S) ***astaxanthin*** or a food additive contg. (3S,3'S)

astaxanthin can be produced using such recombinant hosts.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 7 OF 7 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN DUPLICATE 2

ACCESSION NUMBER: 1997:179804 BIOSIS

DOCUMENT NUMBER: PREV199799471517

TITLE: Biosynthesis of ketocarotenoids in transgenic cyanobacteria expressing the algal gene for beta-C-4-oxygenase, ***crtO*** .

AUTHOR(S): Harker, Mark; Hirschberg, Joseph [Reprint author]

CORPORATE SOURCE: Dep. Genet., Hebrew Univ. Jerusalem, Givat-Ram, Jerusalem 91904, Israel

SOURCE: FEBS Letters, (1997) Vol. 404, No. 2-3, pp. 129-134.

CODEN: FEBLAL. ISSN: 0014-5793.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 24 Apr 1997

Last Updated on STN: 24 Apr 1997

AB The ketocarotenoid ***astaxanthin*** is produced by a number of marine bacteria and microalgae. It is synthesized from beta-carotene by the addition of two keto groups to carbons C4 and C4' and two hydroxyl groups to C3 and C3'. The gene, ***crtO***, encoding beta-C4-oxygenase which converts beta-carotene to canthaxanthin was cloned from the green alga Haematococcus pluvialis. We transferred ***crtO*** to the cyanobacterium Synechococcus PCC7942, which contains a beta-carotene hydroxylase gene and normally accumulates beta-carotene and zeaxanthin. The genetically engineered cyanobacterium produced ***astaxanthin*** as well as other ketocarotenoids. The results confirm that ***crtO*** can function in cyanobacteria in conjunction with the intrinsic carotenoid enzymes to produce ***astaxanthin***. Specifically, this finding indicates that beta-carotene hydroxylase, which normally converts beta-carotene to zeaxanthin, can also function in the biosynthesis of ***astaxanthin***. These results provide the first evidence of genetic manipulation of a ***plant*** -type carotenoid biosynthesis pathway toward the production of novel carotenoids.

=> astaxanthin and seed and promoter

ASTAXANTHIN IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.

For a list of commands available to you in the current file, enter

"HELP COMMANDS" at an arrow prompt (=>).

=> s astaxanthin and seed and promoter

L3 9 ASTAXANTHIN AND SEED AND PROMOTER

=> duplicate remove l3

PROCESSING COMPLETED FOR L3

L4 9 DUPLICATE REMOVE L3 (0 DUPLICATES REMOVED)

=> d l4 1-9 ti

L4 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Transgenic plants producing 4-ketocarotenoids in flower petals

L4 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Sequence of LIS1 ***promoter*** derived from S-linalool synthase of Clarkia breweri and uses in expression of transgenes in floral tissues

L4 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Carotenoid ketolase gene CrtO from Rhodococcus erythropolis

L4 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Regulation of genes involved in carotenoid and tocopherol biosynthesis pathway in transgenic plants for producing carotenoid compounds, tocopherol compounds, and specialty oils in plant ***seeds***

L4 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Improved carotenoid biosynthesis in oilseed plants and its uses in specialty oil production

L4 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Process for production of carotenoids, xanthophylls and apo-carotenoids utilizing eukaryotic microorganisms

L4 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI DNA construct expressing keto group enzyme and its use to make transgenic oilseed plants for xanthophyll production

L4 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Methods for producing transgenic plants and ***seeds*** with altered xanthophyll compositions

L4 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Using enzymes of carotenoid biosynthesis to alter the carotenoid content and fatty acid profile of ***seeds***

=> d l4 1-9 ibib ab

L4 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:3719 CAPLUS
 DOCUMENT NUMBER: 140:74183
 TITLE: Transgenic plants producing 4-ketocarotenoids in flower petals
 INVENTOR(S): Hauptmann, Randal; Eisenreich, Robert; Eschenfeldt, William; Khambatta, Zubin
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 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 5
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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